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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,341	07/02/2002	Ilia Greenblat	56162.000356	8342

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EXAMINER

GIANOLA, JOHN F

ART UNIT

PAPER NUMBER

2145

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/064,341

Applicant(s)

GREENBLAT ET AL.

Examiner

John F. Gianola

Art Unit

2145

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20030402.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Claim Rejections - 35 USC § 112

1. Claims 2, 5 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. Claim 2, dependent on the system of Claim 1, states "...the request counter maintains a separate count for each task being executed by the processor..." The phrase "...the processor..." is indefinite. As stated in Claim 1, a plurality of DMA controllers service DMA requests by a plurality of processors. Likewise, "...DMA agents [are] coupled to the plurality of processors, each DMA agent being part of a ring member including a processor." According to this language, the DMA agent and the DMA controller may be located on separate processors in a network. The processor, as stated in Claim 2, could potentially be located on the DMA controller or the DMA agent, which could be one single processor or two separate processors. For further rejections in this action it is assumed "the processor" is the DMA agent's processor. Also, the phrase "...maintains a separate count for each task being executed..." is indefinite. This phrase could mean one of many things, including, but not limited to: maintaining a count of outstanding tasks for a processor, or maintaining a count of transmitted bytes for a plurality of concurrent DMA transfers. For this office action it is assumed the phrase "separate count for each task being executed" refers to maintain a count of transmitted (or remaining to be transmitted) bytes for one or more DMA transfers.

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3. Claim 5, dependent on the system of Claim 3 (itself dependent on Claim 1), states "...upon the counter returning to zero the processor is enabled to switch to other tasks...." The phrase "...the processor..." is indefinite. As stated in Claim 1, a plurality of DMA controllers service DMA requests by a plurality of processors. Likewise, "...DMA agents [are] coupled to the plurality of processors, each DMA agent being part of a ring member including a processor." According to this language, the DMA agent and the DMA controller may be located on separate processors in a network. The processor, as stated in Claim 5, could potentially be located on the DMA controller or the DMA agent, which could be one single processor or two separate processors. For further rejections in this action it is assumed "the processor" is the DMA agent's processor.

4. Claim 6, dependent upon Claim 5, states "...a new DMA request for a different task is deferred until the counter has returned to zero for the given task..." This phrase is indefinite because it is unclear whether the deferral of servicing of DMA requests is done by the DMA controller or the DMA agent, which could potentially be one in the same, or two separate members of a network.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Böning.

6. As to Claim 8, Böning discloses:

Issuing DMA requests to a target DMA controller (see column 8, lines 13-15);

Maintaining a count of DMA requests on a per-task basis (see column 7, lines 17-18);

Issuing an acknowledgement that a DMA request has been satisfied by the target DMA controller (see column 8, 25-30);

Reducing the count based on the acknowledgement (see column 8, 25-30); and

Enabling a processor responsible for issuing the DMA requests for perform new activity when the count has returned to zero (Inherent in the process described in column 8, lines 26-35. In this process, a new command is not loaded until the counter has reached zero).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leach et. al. (US. Pat. No. 5,410,654) in view of Böning (US Pat. No. 4,635,191).

9. Leach et. al. disclose:

As to Claim 1:

A plurality of processors comprising ring members on the at least one ring network (see Column 3, lines 15-25);

A plurality of DMA controllers on the at least one ring network, the DMA controllers controlling servicing of DMA requests by the plurality of processors (see Column 7, lines 43-60).

10. Leach et. al, while describing external access to DMA controllers, fail to specifically describe a DMA agent. Böning, however, discloses:

A plurality of DMA agents coupled to the plurality of processors, each DMA agent being part of a ring member including a processor (see Böning, Column 3, lines 8-27);

Each DMA agent adapted to issue an indicator to a request counter couple to the DMA agent for each DMA request issued by the DMA agent to a DMA controller (see Column 7, lines 16-18);

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Thereby allowing each DMA agent to maintain a count of the outstanding DMA requests that have been issued on behalf of the processor associated with the DMA agent (see Column 7, lines 16-18).

11. As to Claim 3:

Wherein upon satisfaction of the DMA request by a target DMA controller, the target DMA controller issues a response that causes the request counter to decrement the count by one (see column 8, lines 21-27).

12. As to Claim 4:

Wherein the DMA requests issued by the DMA agent to the DMA controller and the response issued by the target DMA controller are transmitted as messages on the at least on ring network (see column 3, lines 15-25).

13. Böning discloses:

As to Claim 2:

Wherein the request counter maintains a separate count for each task being executed by the processor (see Column 7, lines 16-18).

14. As to Claim 5:

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Wherein upon the counter returning to zero the processor is enabled to switch to other tasks because all DMA requests for a given task have been satisfied (see column 8, lines 26-35).

15. As to Claim 6:

Whereupon a new DMA request for a different task is deferred until the counter has returned zero for the given task (Inherent in the process described in column 8, lines 26-35. In this process, a new command is not loaded until the counter has reached zero).

16. As to Claim 7:

Böning describes a counter as disclosed above, but does specifically disclose:

Wherein the request counter is contained in a doorbell register supporting up to 64 tasks.

A doorbell register is a well-known type of memory storage in the art. In the specification, the applicant describes registers on a "doorbell agent," however, the applicants' claims do not speak to any type of "doorbell agent," nor does the specification disclose a deliberate redefinition of the term "doorbell register." This claim does not patently differentiate from Böning because the selection of register type is an arbitrary design choice.

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17. It would have obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Leach et. al. with the method of Böning in order to use conditional control commands to be carried out automatically by the control device in order to relieve the microprocessor (see Böning, column 1, lines 56-60).

18. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Böning in view of Leach et. al. Böning discloses the limitations of Claim 8, but not does not necessarily describe his invention as functioning over a network, however, Leach et. al. disclose:

19. As to Claim 9:

Wherein the DMA requests are issued as message on the at least on ring network (see Column 3, lines 15-25).

20. As to Claim 10:

Wherein the acknowledgement is issued as a message on the at least one ring network (see Column 3, lines 15-25).

21. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of Böning with the invention of Leach et. al. in order to use the method of Böning with a ring of interconnected systems (see Leach et. al., column 3, lines 15-25).

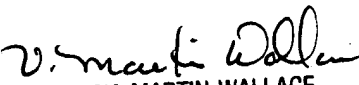
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F Gianola whose telephone number is (571)272-3848. The examiner can normally be reached on Mon - Fri (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Valencia Martin-Wallace can be reached at (571)272-6159. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jfg


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